

VPM-7704 User's Manual

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VPM-7704 User's Manual

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Introduction

Thank you for choosing the Moxa VPM-7704. The VPM-7704 makes it easy to enable serial operations on VPort 704 series modular industrial multi-service gateways. The VPort 7704 has four RS-232/422/485 ports.

The following topics are covered in this chapter:

- ❑ **Overview**
- ❑ **Package Checklist**
- ❑ **Product Features**
- ❑ **Product Specifications**

Overview

The VPM-7704 is designed to make your industrial serial devices Internet ready in an instant. The compact size of the VPM-7704 makes it the ideal choice for connecting RS-232/422/485 serial devices—such as PLCs, meters, and sensors—to an IP-based Ethernet LAN, making it possible for your software to access serial devices anywhere over a local LAN or the Internet.

The VPM-7704 ensures compatibility with network software that uses a standard network API (Winsock or BSD Sockets) by supporting TCP Server Mode, TCP Client Mode, and UDP Mode. Thanks to the VPM-7704's Real COM/TTY drivers, software that works with COM/TTY ports can be set up to work over a TCP/IP network in no time. This convenient feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

The VPM-7704 serial device servers support automatic IP configuration protocols (DHCP, BOOTP) and manual configuration via the VPM-7704's handy web browser console. Either method offers quick and effective installation. And with the VPM-7704's Windows Utility, installation of multiple devices is very straightforward, since all system parameters can be stored and then copied to other device servers simultaneously.

Package Checklist

Moxa VPM-7704 series products are shipped with the following items:

Standard Accessories

- 1 VPM-7704 4-port serial device server
- Product Warranty Statement

NOTE: Notify your sales representative if any of the above items is missing or damaged.

Product Features

The VPM-7704 products offer the following features:

- Makes your serial devices Internet ready
- Versatile socket operation modes, including TCP Server, TCP Client, and UDP
- 2 or 4-wire RS-485 with patented ADDC™ (Automatic Data Direction Control)
- Built-in 15 KV ESD protection for all serial signals

Product Specifications

Serial Interface

Serial Standards: RS-232/422/485

Number of Ports: 4 (RJ45 connectors)

Serial Line Protection: 15 KV ESD protection for all signals

RS-485 Data Direction Control: ADDC® (automatic data direction control)

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: DSR/DTR and RTS/CTS (RS-232 only), XON/XOFF

Baudrate: 50 bps to 921.6 Kbps

Serial Signal

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND

RS-422: Tx+, Tx-, Rx+, Rx-, GND

RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND

RS-485-2w: Data+, Data-, GND

Power Requirements

Power Consumption: Approx. 5 W

Physical Characteristics

Housing: Metal

Dimensions: 41 x 138 x 139 mm (1.61 x 5.43 x 5.47 in)

Weight: 530 g

Installation: Mounted in a VPort 700 series slot

Getting Started

This chapter includes information about installing your VPM-7704 device server.

The following topics are covered in this chapter:

- ▣ **VPM-7704 Appearance**
- ▣ **VPM-7704 LED Indicators**
- ▣ **Adjustable Pull High/Low Resistors for the RS-485 Port**

VPM-7704 Appearance



VPM-7704 LED Indicators

The function of the LED indicators on the top panel of the VPM-7704 are described in the following table.

LED Name	LED Color	LED Function
STAT	Red	Steady on: Power is on and the VPM-7704 is booting up.
	Green	Steady on: Power is on and the VPM-7704 is functioning normally.
	Off	Power is off, or power error condition exists.
Fault	Red	Blinking: Indicates an LAN IP conflict, or DHCP or BOOTP server did not respond properly.
P1, P2, P3, P4	orange	Serial port is receiving data
	green	Serial port is transmitting data
	off	No data is being transmitted or received through the serial port

Adjustable Pull High /low Resistors for the RS-485 Port

In some critical environments, you may need to add termination resistors to prevent serial signal reflection. When using termination resistors, it is important to set the pull high/low resistors correctly so that the electrical signal is not corrupted. Since there is no resistor value that works for every environment, DIP switches are used to specify the pull high/low resistor values for each RS-485 port.

To set the pull high /low resistors to 150 K Ω , make sure both of the assigned DIP switches are in the OFF position. This is the default setting.

To set the pull high /low resistors to 1 K Ω , make sure both of the assigned DIP switches are in the ON position.



Pull high /low resistors for the RS-485 Port

	DIP1	DIP2	DIP3	DIP4
	Pull High	Pull Low	Terminator	Reserved
ON	1 K Ω	1 K Ω	120 Ω	Reserved
OFF (default)	150 K Ω	150 K Ω	–	Reserved

**ATTENTION**

Do not set the resistors to 1 K Ω when using RS-232. Doing so will degrade the RS-232 signals and reduce the effective communication distance.

Choosing the Proper Operation Mode

In this chapter we describe the VPM-7704's operation modes. The options include an operation mode that uses a driver installed on the host computer, and operation modes that rely on TCP/IP socket programming concepts. After choosing the proper operation mode for your application in this chapter, refer to Chapter 4 for detailed configuration instructions.

The following topics are covered in this chapter:

- ❑ **Overview**
- ❑ **Real COM Mode**
- ❑ **TCP Server Mode**
- ❑ **TCP Client Mode**
- ❑ **UDP Mode**
- ❑ **Pair Connection Mode**
- ❑ **Disabled Mode**

Overview

VPM-7704 device servers enable network operation of traditional RS-232/422/485 devices. Device servers can bi-directionally translate data between the serial and Ethernet formats, allowing your computer to access, manage, and configure remote facilities and equipment over the Internet from anywhere in the world.

Traditional SCADA and data collection systems rely on serial ports (RS-232/422/485) to collect data from various kinds of instruments. Since VPM-7704 serial device servers enable network operation of instruments equipped with an RS-232/422/485 communication port, your SCADA and data collection system will be able to access all instruments connected to a standard TCP/IP network, regardless of whether the devices are used locally or at a remote site.

The VPM-7704 is a modular IP-based network device that allows you to expand the number of serial ports for a host computer on demand. As long as your host computer supports the TCP/IP protocol, you won't be limited by the host computer's bus limitation (such as ISA or PCI), or lack of drivers for various operating systems.

In addition to providing socket access, the VPM-7704 also comes with a Real COM/TTY driver that transmits all serial signals intact. This means that your existing COM/TTY-based software can be preserved, without needing to invest in additional software.

Three different Socket Modes are available: TCP Server, TCP Client, and UDP Server/Client. The main difference between the TCP and UDP protocols is that TCP guarantees delivery of data by requiring the recipient to send an acknowledgement to the sender. UDP does not require this type of verification, making it possible to offer speedier delivery. UDP also allows multicasting of data to groups of IP addresses.

Real COM Mode

The VPM-7704 comes equipped with COM drivers that work with Windows systems, and also TTY drivers for Linux systems. The driver establishes a transparent connection between host and serial device by mapping the IP:Port of the VPM-7704's serial port to a local COM/TTY port on the host computer. This operation mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device at the same time.



ATTENTION

The driver used for Real COM Mode comes with the NPort Windows Driver Manager.

The important point is that Real COM Mode allows users to continue using RS-232/422/485 serial communications software that was written for pure serial communications applications. The driver intercepts data sent to the host's COM port, packs it into a TCP/IP packet, and then redirects it through the host's Ethernet card. At the other end of the connection, the VPM-7704 accepts the Ethernet frame, unpacks the TCP/IP packet, and then transparently sends it to the appropriate serial device attached to one of the VPM-7704's serial ports.



ATTENTION

Real COM Mode allows several hosts to obtain access control over the same VPM-7704. The driver that comes with your VPM-7704 controls host access to attached serial devices by checking the host's IP address. Modify the Accessible IP Setting table when the legal IP address is required by your application

TCP Server Mode

In **TCP Server mode**, the VPM-7704 provides a unique IP:Port address on a TCP/IP network. The VPM-7704 waits passively to be contacted by the host computer, allowing the host computer to establish a connection with and get data from the serial device. This operation mode also supports up to 4 simultaneous connections, so that multiple hosts can collect data from the same serial device—at the same time.

TCP Client Mode

In **TCP Client mode**, the VPM-7704 can actively establish a TCP connection to a pre-defined host computer when serial data arrives.

After the data has been transferred, the VPM-7704 can automatically disconnect from the host computer by using the **TCP alive check time** or **Inactivity time** settings. Refer to chapter 4 for details.

UDP Mode

Compared to TCP communication, UDP is faster and more efficient. In UDP mode, you can multicast data from the serial device to multiple host computers, and the serial device can also receive data from multiple host computers, making this mode ideal for message display applications.

Pair Connection Mode

Pair Connection Mode employs two VPM-7704 units in tandem, and can be used to remove the 15-meter distance limitation imposed by the RS-232 interface. One VPM-7704 is connected from its RS-232 port to the COM port of a PC or other type of computer, such as a hand-held PDA, and the serial device is connected to the RS-232 port of the other VPM-7704. The two VPM-7704 units are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two VPM-7704 device servers.

Disabled Mode

When the Operation Mode for a particular port is set to **Disabled**, that port will be disabled.

Web Console Configuration

The Web Console provides a convenient, user-friendly way to configure the VPM-7704. In this chapter, we introduce the Web Console function groups and function definitions, using the VPM-7704 to illustrate.

The following topics are covered in this chapter:

❑ **Opening Your Browser**

❑ **Basic Settings**

❑ **Network Settings**

❑ **Serial Port Settings**

- Operation Modes
- Real COM Mode
- TCP Server Mode
- TCP Client Mode
- UDP Mode
- Pair Connection Mode
- Disabled Mode

❑ **Serial Parameters**

❑ **System Management**

- Misc. Network Settings
- Auto Warning Settings
- Maintenance

❑ **System Monitoring**

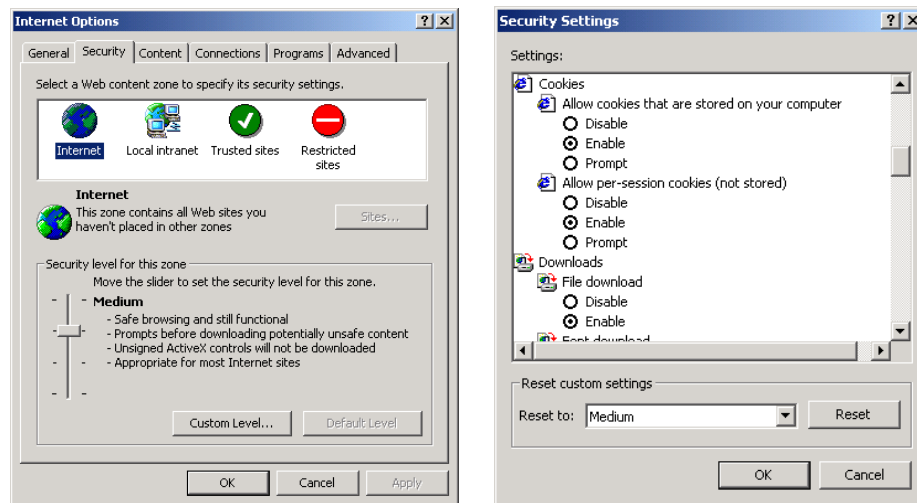
- Serial Status
- System Status

❑ **Save Configuration**

- Restart: Restart System
- Restart: Restart Ports

Opening Your Browser

1. Open your browser with the cookie function enabled. (To enable your browser for cookies, right click on your desktop Internet Explorer icon, select Properties, click on the Security tab, and then select the three Enable options as shown in the figure below.)



2. Since DHCP mode is the default IP setting of the VPort 700 series, check the VPM-7704's IP address, and then type the IP address in the Address input box (use the correct IP address if different from the default), and press Enter.

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■ Model	- VPM-7704	■ IP	- 192.168.127.241	■ MAC Address	- 00:90:E8:7A:7B:6C
■ Name	- VPM-7704_8698	■ Serial NO.	- 8698	■ Firmware	- 1.0 Build 10030313

- Main Menu

- Overview
- Basic Settings
- Network Settings
- Serial Port Settings
- System Management
- System Monitoring
- Save Configuration
- Restart

Welcome to VPM-7704

Model name	VPM-7704
Serial No.	8698
Firmware version	1.0 Build 10030313
Ethernet IP address	192.168.127.241
Ethernet MAC address	00:90:E8:7A:7B:6C
Local time	2000/03/19 07:09:28
System uptime	0 days 04h:53m:32s
Serial port 1	115200,None,8,1
Serial port 2	115200,None,8,1
Serial port 3	115200,None,8,1
Serial port 4	115200,None,8,1

Basic Settings

Server Settings

Server name

Setting	Factory Default	Necessity
1 to 39 characters	[model name]_[Serial No.]	Optional

This option is useful for specifying the location or application of different VPM-7704 device servers.

Console Settings

The “Disable” option for “Web Console” and “Telnet Console” is included for security reasons. In some cases, you may want to disable one or both of these console utilities as an extra precaution to prevent unauthorized users from accessing your VPM-7704. The factory default for both Web console and Telnet console is **Enable**.

Web console

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

Telnet console

Setting	Factory Default	Necessity
Enable or Disable	Enable	Required

Auto refresh time

Setting	Factory Default	Necessity
0 to 99 sec	5 sec	Required

Network Settings

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Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Network Settings

IP settings	Fixed
IP address	192.168.127.241
Netmask	255.255.255.0
Gateway	-
DNS server 1	-
DNS server 2	-

Main Menu
Overview
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Network Settings
- Serial Port Settings
- System Management
- System Monitoring
Save Configuration
- Restart

You only can assign a valid IP address to the VPM-7704 through the VPort 700 series module. Refer to the VPort 700 Series User's Manual, "network setting session" for more details.

Serial Port Settings

There are two main configuration categories under Serial Port Settings: **Operation Modes** and **Serial parameters**.

Operation Modes

Click **Operation Modes** to display descriptions of operation mode settings and advanced settings for port 1 to 4.

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Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Operation Modes

Port	Operating Mode	Packing Length	Delimiter 1	Delimiter 2	Delimiter Process	Force Transmit
1	Real COM	0	00 (Disable)	00 (Disable)	Do Nothing	0
		Max connection:	1			
2	Real COM	0	00 (Disable)	00 (Disable)	Do Nothing	0
		Max connection:	1			
3	Real COM	0	00 (Disable)	00 (Disable)	Do Nothing	0
		Max connection:	1			
4	Real COM	0	00 (Disable)	00 (Disable)	Do Nothing	0
		Max connection:	1			

Main Menu
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Network Settings
- Serial Port Settings
Operation Modes
Serial Parameters
- System Management
- System Monitoring
Save Configuration
- Restart

To modify operation mode settings and advanced settings for a particular port, click on the port number you want to configure under **Operation Modes**.

Real COM Mode

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Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Operation Modes

Port 1

Operation mode: RealCOM

TCP alive check time: 7 (0 - 99 min)

Max connection: 1

Ignore jammed IP: ☐ Enable ☒ Disable

Allow driver control: ☐ Enable ☒ Disable

Data Packing

Packing length: 0 (0 - 1024)

Delimiter 1: 00 (Hex) ☐ Enable

Delimiter 2: 00 (Hex) ☐ Enable

Delimiter process: Do Nothing (Processed only when packing length is 0)

Force transmit: 0 (0 - 65535 ms)

Apply the above settings to: ☒ P1 ☐ P2 ☐ P3 ☐ P4 ☐ All ports

Submit

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The VPM-7704 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, the VPM-7704 starts listening for another Real COM driver's connection from another host.

Max connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default only allows 1 connection at a same. When Max Connection is set to 1, the Real COM driver on the specific host has full control.

Max. Connection = 1: Allows only 1 host's Real COM driver to open the specific VPM-7704 serial port.

Max Connection = 2 to 4: Allows 2 to 4 host's Real COM drivers to open the specific VPM-7704 serial port, at the same time. When multiple hosts' Real COM drivers open the serial port at the same time, the COM driver only provides a pure data tunnel without control ability. That is, this serial port parameter will use the firmware's settings, independent of your own application program (AP).

Application software that is based on the COM driver will receive a driver response of "success" when the software uses any of the Win32 API functions. The firmware will only send the data back to the driver on the host. Data will be sent first-in-first-out when data comes into the VPM-7704 from the Ethernet interface.

**ATTENTION**

When Max connection is set to 2, 3, or 4, the VPM-7704 will be using a "multi-connection application" (i.e., 2, 3, or 4 hosts are allowed access to the port at the same time). When using a multi-connection application, the VPM-7704 will use the serial communication parameters set in the console. All of the hosts connected to that port must use the same serial settings. If one of the hosts opens the COM port with parameters that are different from the VPM-7704's console setting, data communication may not work properly.

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when Max connection > 1, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Now, if you select Yes for "Ignore jammed IP" the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Allow driver control

Setting	Description	Factory Default
No or Yes	No	Required

If "max connection" is greater than 1, VPM-7704 will ignore driver control commands from all connected hosts. However, if you set "Allow driver control" to YES, control commands will be accepted. Note that since VPM-7704 may get configuration changes from multiple hosts, the most recent command received will take precedence.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0: The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the VPM-7704 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the VPM-7704's Ethernet port.

**ATTENTION**

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the VPM-7704 will automatically pack the data and send it to the Ethernet port. To use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter +1 Delimiter +2 Strip Delimiter	Do Nothing	Optional

Delimiter +1 or Delimiter +2: The data will be transmitted when an additional byte (for Delimiter 1), or an additional 2 bytes (for Delimiter 2) of data is received after receiving the Delimiter.

Strip Delimiter: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

Do nothing: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disables the force transmit timeout.

1 to 65535: Forces the VPM-7704's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which the VPM-7704 fetches the serial data from its internal buffer. If data is coming in through the serial port, the VPM-7704 stores the data in the internal buffer. The VPM-7704 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the force transmit time interval reaches the time specified under Force Transmit timeout.

The force transmit timeout could be different for different applications, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

$$10 \text{ (bits)} / 1200 \text{ (bits/s)} * 1000 \text{ (ms/s)} = 8.3 \text{ ms.}$$

Therefore, you should set Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms.

If the user wants to send the series of characters in a packet, the serial device attached to the VPM-7704 should send characters with a time delay not larger than the Force Transmit timeout between characters, and the total length of data must be smaller than or equal to the VPM-7704's internal buffer size. The serial communication buffer size of the VPM-7704 is 1 KB per port.

TCP Server Mode



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Model	- VPM-7704	IP	- 192.168.127.241
Name	- VPM-7704_8698	Serial NO.	- 8698
		MAC Address	- 00:90:E8:7A:7B:6C
		Firmware	- 1.0 Build 10030313

Operation Modes

- Main Menu
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Port 1

Operation mode: TCP Server

TCP alive check time: 7 (0 - 99 min)

Inactivity time: 0 (0 - 65535 ms)

Max connection: 1

Ignore jammed IP: Enable Disable

Allow driver control: Enable Disable

TCP port: 4001

Command port: 966

Data Packing

Packing length: 0 (0 - 1024)

Delimiter 1: 00 (Hex) Enable

Delimiter 2: 00 (Hex) Enable

Delimiter process: Do Nothing (Processed only when packing length is 0)

Force transmit: 0 (0 - 65535 ms)

Apply the above settings to:
 ☒ P1
☐ P2
☐ P3
☐ P4

☐ All ports

Submit

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The VPM-7704 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, the VPM-7704 starts listening for another host's TCP connection.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: The VPM-7704 automatically closes the TCP connection if there is no serial data activity for the given time. After the connection is closed, the VPM-7704 starts listening for another host's TCP connection.

This parameter defines the maintenances status as Closed or Listen on the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the inactivity time is set to 0, the current TCP connection is maintained until a connection close request is received.



ATTENTION

The Inactivity time should be greater than the Force transmit timeout. To prevent the unintended loss of data due to a session getting disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

Max Connection

Setting	Factory Default	Necessity
1, 2, 3, 4	1	Required

Max Connection is usually used when the user needs to receive data from different hosts simultaneously. The factory default only allows 1 connection at a time.

Max. Connection 1: The VPM-7704 only allows 1 host to open a TCP connection to the specific serial port.

Max Connection 2 to 4: Allows 2 to 4 host's TCP connection requests to open the specific VPM-7704 serial port, at the same time. When multiple hosts establish a TCP connection to the specific serial port at the same time, the VPM-7704 will duplicate the serial data and transmit it to all of the hosts. Ethernet data is sent on a first-in-first-out basis to the serial port when data comes into the VPM-7704 from the Ethernet interface.

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when Max connection > 1, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Now, if you select Yes for "Ignore jammed IP" the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Allow driver control

Setting	Factory Default	Necessity
No or Yes	No	Optional

If "max connection" is greater than 1, the VPM-7704 will ignore driver control commands from all connected hosts. However, if you set "Allow driver control" to YES, control commands will be accepted. Note that since the VPM-7704 may get configuration changes from multiple hosts, the most recent command received will take precedence.

Local TCP port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

The TCP port that the VPM-7704 uses to listen to connections, and that other devices must use to contact the VPM-7704. To avoid conflicts with well known TCP ports, the default is set to 4001.

Command port

Setting	Factory Default	Necessity
1 to 65535	966	Optional

The command port is a listen TCP port for IP-Serial Lib commands from the host. In order to prevent a TCP port conflict with other applications, the user can adjust the command port to another port if needed. IP-Serial Lib will automatically check the Command Port on the VPM-7704 so the user does not need to configure the program.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0: The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the VPM-7704 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the VPM-7704's Ethernet port.

**ATTENTION**

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the VPM-7704 will automatically pack the data and send it to the Ethernet port. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter +1 Delimiter +2 Strip Delimiter	Do Nothing	Optional

Delimiter +1 or Delimiter +2: The data will be transmitted when an additional byte (for Delimiter 1), or an additional 2 bytes (for Delimiter 2) of data is received after receiving the Delimiter.

Strip Delimiter: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

Do nothing: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disables the force transmit timeout.

1 to 65535: Forces the VPM-7704's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which the VPM-7704 fetches the serial data from its internal buffer. If data is coming in through the serial port, the VPM-7704 stores the data in the internal buffer. The VPM-7704 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the force transmit time interval reaches the time specified under Force Transmit timeout.

The force transmit timeout could be different for different applications, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

$$10 \text{ (bits)} / 1200 \text{ (bits/s)} * 1000 \text{ (ms/s)} = 8.3 \text{ ms.}$$

Therefore, you should set Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms.

If the user wants to send the series of characters in a packet, the serial device attached to the VPM-7704 should send characters with a time delay not larger than the Force Transmit timeout between characters, and the total length of data must be smaller than or equal to the VPM-7704's internal buffer size. The serial communication buffer size of the VPM-7704 is 1 KB per port.

TCP Client Mode



Total Solution for Industrial Device Networking

www.moxa.com

Model - VPM-7704

Name - VPM-7704_8698

IP - 192.168.127.241

Serial NO. - 8698

MAC Address - 00:90:E8:7A:7B:6C

Firmware - 1.0 Build 10030313

Operation Modes

- Main Menu

- Overview
- Basic Settings
- Network Settings
- Serial Port Settings
 - Operation Modes
 - Serial Parameters
- System Management
- System Monitoring
- Save Configuration
- Restart

Port 1

Operation mode: TCP Client

TCP alive check time: 7 (0 - 99 min)

Inactivity time: 0 (0 - 65535 ms)

Ignore jammed IP: ☐ Enable ☒ Disable

Destination address 1: Port 4001

Destination address 2: Port 4001

Destination address 3: Port 4001

Destination address 4: Port 4001

Designated local port 1: 5010

Designated local port 2: 5011

Designated local port 3: 5012

Designated local port 4: 5013

Connection control: Startup/None

Data Packing

Packing length: 0 (0 - 1024)

Delimiter 1: 00 (Hex) ☐ Enable

Delimiter 2: 00 (Hex) ☐ Enable

Delimiter process: Do Nothing (Processed only when packing length is 0)

Force transmit: 0 (0 - 65535 ms)

Apply the above settings to: ☒ P1 ☐ P2 ☐ P3 ☐ P4 ☐ All ports

Submit

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Optional

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The VPM-7704 automatically closes the TCP connection if there is no TCP activity for the given time.

Inactivity time

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0 ms: TCP connection is not closed due to an idle serial line.

0-65535 ms: The VPM-7704 automatically closes the TCP connection if there is no serial data activity for the given time.

This parameter defines the maintenances status as Closed or Listen on the TCP connection. The connection is closed if there is no incoming or outgoing data through the serial port during the specific Inactivity time.

If the value of inactivity time is set to 0, the current TCP connection is maintained until connection dose request is received.

**ATTENTION**

The Inactivity time should be greater than Force transmit timeout. To prevent the unintended loss of data due to the session getting disconnected, it is highly recommended that this value is set large enough so that the intended data transfer is completed.

**ATTENTION**

Inactivity time is active ONLY when "TCP disconnect" is set to "Inactivity Time."

Ignore jammed IP

Setting	Factory Default	Necessity
No or Yes	No	Optional

Previously, when there are more than one hosts, and the serial device is transmitting data, if any one of the connected hosts is not responding, it will wait until the data has been transmitted successfully before transmitting the second group of data to all hosts. Now, if you select Yes for "Ignore jammed IP" the host that is not responding will be ignored, but the data will still be transmitted to the other hosts.

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0: The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the VPM-7704 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the VPM-7704's Ethernet port.

**ATTENTION**

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the VPM-7704 will automatically pack the data and send it to the Ethernet port. To use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing Delimiter +1 Delimiter +2 Strip Delimiter	Do Nothing	Optional

Delimiter +1 or Delimiter +2: The data will be transmitted when an additional byte (for Delimiter 1), or an additional 2 bytes (for Delimiter 2) of data is received after receiving the Delimiter.

Strip Delimiter: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

Do nothing: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disables the force transmit timeout.

1 to 65535: Forces the VPM-7704's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which the VPM-7704 fetches the serial data from its internal buffer. If data is coming in through the serial port, the VPM-7704 stores the data in the internal buffer. The VPM-7704 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the force transmit time interval reaches the time specified under Force Transmit timeout.

The force transmit timeout could be different for different applications, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

$$10 \text{ (bits)} / 1200 \text{ (bits/s)} * 1000 \text{ (ms/s)} = 8.3 \text{ ms.}$$

Therefore, you should set Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms.

If the user wants to send the series of characters in a packet, the serial device attached to the VPM-7704 should send characters with a time delay not larger than the Force Transmit timeout between characters, and the total length of data must be smaller than or equal to the VPM-7704's internal buffer size. The serial communication buffer size of the VPM-7704 is 1 KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address or Domain Address (E.g., 192.168.1.1)	None	Required

Allows the VPM-7704 to connect actively to the remote host whose address is set by this parameter.

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address or Domain Address (e.g., 192.168.1.1)	None	Optional

Allows the VPM-7704 to connect actively to the remote host whose address is set by this parameter.



ATTENTION

Up to 4 connections can be established between the VPM-7704 and hosts. The connection speed or throughput may be slow if one of the four connections is slow, since the slow connection will slow down the other 3 connections.



ATTENTION

The "Destination IP address" parameter can use both IP address and Domain Name. For some applications, the user may need to send the data actively to the remote destination domain name.

Designated Local Port 1/2/3/4

Setting	Factory Default	Necessity
TCP Port No.	5011 (Port 1) 5012 (Port 2) 5013 (Port 3) 5014 (Port 4)	Required

Connection control

Setting	Factory Default	Necessity
Startup/None, Any Character/None, Any Character/Inactivity Time, DSR ON/DSR OFF, DSR ON/None, DCD ON/DCD OFF, DCD ON/None	Startup/None	Required

The meaning of each of the above settings is given in the table below. In general, both the Connect condition and Disconnect condition are given.

Connect / Disconnect	Description
Startup/None (default)	A TCP connection will be established on startup, and will remain active indefinitely.
Any Character/None	A TCP connection will be established when any character is received from the serial interface, and will remain active indefinitely.
Any Character/ Inactivity Time	A TCP connection will be established when any character is received from the serial interface, and will be disconnected when the Inactivity time out is reached.
DSR On/DSR Off	A TCP connection will be established when a DSR "On" signal is received, and will be disconnected when a DSR "Off" signal is received.
DSR On/None	A TCP connection will be established when a DSR "On" signal is received, and will remain active indefinitely.
DCD On/DCD Off	A TCP connection will be established when a DCD "On" signal is received, and will be disconnected when a DCD "Off" signal is received.
DCD On/None	A TCP connection will be established when a DCD "On" signal is received, and will remain active indefinitely.

UDP Mode



Total Solution for Industrial Device Networking

www.moxa.com

Model - VPM-7704

Name - VPM-7704_8698

IP - 192.168.127.241

Serial NO. - 8698

MAC Address - 00:90:E8:7A:7B:6C

Firmware - 1.0 Build 10030313

- Main Menu

- Overview
- Basic Settings
- Network Settings
 - Serial Port Settings
 - Operation Modes
 - Serial Parameters
- System Management
- System Monitoring
- Save Configuration
- Restart

Operation Modes

Port 1

Operation mode: UDP

	Begin	End	Port
Destination address 1			4001
Destination address 2			4001
Destination address 3			4001
Destination address 4			4001
Local listen port	4001		

Data Packing

Packing length: (0 - 1024)

Delimiter 1: (Hex) ☐ Enable

Delimiter 2: (Hex) ☐ Enable

Delimiter process: Do Nothing (Processed only when packing length is 0)

Force transmit: (0 - 65535 ms)

Apply the above settings to:
 ☒ P1
 ☐ P2
 ☐ P3
 ☐ P4
 ☐ All ports

Submit

Packing length

Setting	Factory Default	Necessity
0 to 1024	0	Optional

Default = 0: The Delimiter Process will be followed, regardless of the length of the data packet. If the data length (in bytes) matches the configured value, the data will be forced out. The data length can be configured for 0 to 1024 bytes. Set to 0 if you do not need to limit the length.

Delimiter 1

Setting	Factory Default	Necessity
00 to FF	None	Optional

Delimiter 2

Setting	Factory Default	Necessity
00 to FF	None	Optional

Once the VPM-7704 receives both delimiters through its serial port, it immediately packs all data currently in its buffer and sends it to the VPM-7704's Ethernet port.



ATTENTION

Delimiter 2 is optional. If left blank, then Delimiter 1 alone trips clearing of the buffer. If the size of the serial data received is greater than 1 KB, the VPM-7704 will automatically pack the data and send it to the Ethernet port. However, to use the delimiter function, you must at least enable Delimiter 1. If Delimiter 1 is left blank and Delimiter 2 is enabled, the delimiter function will not work properly.

Delimiter process

Setting	Factory Default	Necessity
Do nothing	Do Nothing	Optional
Delimiter +1		
Delimiter +2		
Strip Delimiter		

Delimiter +1 or Delimiter +2: The data will be transmitted when an additional byte (for Delimiter 1), or an additional 2 bytes (for Delimiter 2) of data is received after receiving the Delimiter.

Strip Delimiter: When the Delimiter is received, the Delimiter is deleted (i.e., stripped), and the remaining data is transmitted.

Do nothing: The data will be transmitted when the Delimiter is received.

Force transmit

Setting	Factory Default	Necessity
0 to 65535 ms	0 ms	Optional

0: Disables the force transmit timeout.

1 to 65535: Forces the VPM-7704's TCP/IP protocol software to try to pack serial data received during the specified time into the same data frame.

This parameter defines the time interval during which the VPM-7704 fetches the serial data from its internal buffer. If data is coming in through the serial port, the VPM-7704 stores the data in the internal buffer. The VPM-7704 transmits data stored in the buffer via TCP/IP, but only if the internal buffer is full or if the force transmit time interval reaches the time specified under Force Transmit timeout.

The force transmit timeout could be different for different applications, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is

$$10 \text{ (bits)} / 1200 \text{ (bits/s)} * 1000 \text{ (ms/s)} = 8.3 \text{ ms.}$$

Therefore, you should set Force Transmit timeout to be larger than 8.3 ms. Force Transmit timeout is specified in milliseconds and must be larger than 10 ms.

If the user wants to send the series of characters in a packet, the serial device attached to the VPM-7704 should send characters with a time delay not larger than the Force Transmit timeout between characters, and the total length of data must be smaller than or equal to the VPM-7704's internal buffer size. The serial communication buffer size of the VPM-7704 is 1 KB per port.

Destination IP address 1

Setting	Factory Default	Necessity
IP address range e.g., Begin: 192.168.1.1 End: 192.168.1.10	Begin: Empty End: Empty Port: 4001	Required

Destination IP address 2/3/4

Setting	Factory Default	Necessity
IP address range e.g., Begin: 192.168.1.1 End: 192.168.1.10	Begin: Empty End: Empty Port: 4001	Optional

Local listen port

Setting	Factory Default	Necessity
1 to 65535	4001	Required

The UDP port that the VPM-7704 listens to, and that other devices must use to contact the VPM-7704. To avoid conflicts with well known UDP ports, the default is set to 4001.

Pair Connection Mode

Pair Connection Mode employs two VPM-7704 device servers in tandem, and can be used to remove the 15-meter distance limitation imposed by the RS-232 interface. One VPM-7704 is connected from its RS-232 port to the COM port of a PC or other type of computer, such as a hand-held PDA, and the serial device is connected to the RS-232 port of the other VPM-7704. The two VPM-7704 device servers are then connected to each other with a cross-over Ethernet cable, both are connected to the same LAN, or in a more advanced setup, they communicate with each other over a WAN (i.e., through one or more routers). Pair Connection Mode transparently transfers both data and modem control signals (although it cannot transmit the DCD signal) between the two VPM-7704 device servers.

Pair Connection Master Mode

When using Pair Connection Mode, you must select **Pair Connection Master Mode** for the Operation mode of one of the VPM-7704 device servers. In effect, this VPM-7704 will be acting as a TCP client.

The screenshot shows the Moxa VPM-7704 Web Console Configuration interface. At the top, the Moxa logo and "Total Solution for Industrial Device Networking" are displayed, along with the website "www.moxa.com". Below this, a status bar shows device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The main menu on the left includes Overview, Basic Settings, Network Settings, Serial Port Settings, Operation Modes, Serial Parameters, System Management, System Monitoring, Save Configuration, and Restart. The "Operation Modes" section is active, showing "Port 1" settings. The "Operation mode" is set to "Pair Connection Master". The "TCP alive check time" is set to 7 minutes (0-99 min). The "Destination address" is set to Port 4001. There are checkboxes for "Apply the above settings to" P1, P2, P3, P4, and "All ports". A "Submit" button is at the bottom.

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Required

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The VPM-7704 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, the VPM-7704 starts listening for another host's TCP connection.

Destination IP address

Setting	Factory Default	Necessity
IP address range e.g., 192.168.1.1	blank	Optional
TCP port No.	4001	Required

The Pair Connection "Master" will contact the network host that has this IP address. Data will be transmitted through the port No. (4001 by default). Note that you must configure the same TCP port No. for the device server acting as the Pair Connection "Slave."

Pair Connection Slave Mode

When using Pair Connection Mode, you must select **Pair Connection Slave Mode** for the Operation mode of one of the VPM-7704 device servers. In effect, this VPM-7704 will be acting as a TCP server.

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Model: - VPM-7704 IP: - 192.168.127.241 MAC Address: - 00:90:E8:7A:7B:6C
Name: - VPM-7704_8698 Serial NO.: - 8698 Firmware: - 1.0 Build 10030313

Operation Modes

Port 1

Operation mode: Pair Connection Slave

TCP alive check time: 7 (0 - 99 min)

TCP port: 4001

Apply the above settings to: ☒ P1 ☐ P2 ☐ P3 ☐ P4 ☐ All ports

Submit

TCP alive check time

Setting	Factory Default	Necessity
0 to 99 min	7 min	Required

0 min: TCP connection is not closed due to an idle TCP connection.

1 to 99 min: The VPM-7704 automatically closes the TCP connection if there is no TCP activity for the given time. After the connection is closed, the VPM-7704 starts listening for another host's TCP connection.

Local TCP port

Setting	Factory Default	Necessity
TCP port No. (e.g., 4001)	4001	Required

This Port No. must be the same port No. that you set up for the Pair Connection "Master" device server.

Disabled Mode

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Model: - VPM-7704 IP: - 192.168.127.241 MAC Address: - 00:90:E8:7A:7B:6C
Name: - VPM-7704_8698 Serial NO.: - 8698 Firmware: - 1.0 Build 10030313

Operation Modes

Port 1

Operation mode: Disable

Apply the above settings to: ☒ P1 ☐ P2 ☐ P3 ☐ P4 ☐ All ports

Submit

When Operation mode is set to Disabled, that particular port will be disabled. Check the "Apply the above settings to all serial ports" to apply this setting to the other port.

Serial Parameters

**ATTENTION**

Check the serial communication parameters in your Serial Device's user's manual. You should set up the VPM-7704's serial parameters with the same communication parameters used by your serial devices.

The screenshot shows the MOXA VPM-7704 Web Console Configuration page. The top header includes the MOXA logo, the tagline "Total Solution for Industrial Device Networking", and the website "www.moxa.com". Below the header, a green bar displays device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The left sidebar contains a "Main Menu" with options: Overview, Basic Settings, Network Settings, Serial Port Settings, Operation Modes, Serial Parameters (highlighted), System Management, System Monitoring, Save Configuration, and Restart. The main content area is titled "Serial Parameters" and features a table with columns: Port, Alias, Baud Rate, Parity, Data Bit, Stop Bit, Flow Control, FIFO, and Interface. The table has four rows, all with Baud Rate set to 115200, Parity set to None, Data Bit set to 8, Stop Bit set to 1, Flow Control set to RTS/CTS, FIFO set to Enable, and Interface set to RS-232. A "Submit" button is located at the bottom right of the table.

Baud rate

Setting	Factory Default	Necessity
50 bps to 921600 bps	115200 bps	Required

The VPM-7704 supports baud rates from 50 bps to 921.6 Kbps.

Parity

Setting	Factory Default	Necessity
None, Even, Odd, Space, Mark	None	Required

Data bits

Setting	Factory Default	Necessity
5, 6, 7, 8	8	Required

When the user sets Data bits to 5 bits, the stop bits setting will automatically change to 1.5 bits.

Stop bits

Setting	Factory Default	Necessity
1, 1.5, 2	1	Required

Stop bits will be set to 1.5 when Data bits is set to 5 bits.

Flow control

Setting	Factory Default	Necessity
None, RTS/CTS, DTR/DSR, Xon/Xoff	RTS/CTS	Required

FIFO

Setting	Factory Default	Necessity
Enable, Disable	Enable	Required

The VPM-7704's serial ports provide a 16-byte FIFO both in the Tx and Rx directions. Disable the FIFO setting when your serial device does not have a FIFO to prevent data loss during communication.

Interface

Setting	Factory Default	Necessity
RS-232, RS-422, 2-wire RS-485, 4-wire RS-485	RS-232	Required

System Management

There are three main configuration categories under **System Management**: **Misc. Network Settings**, **Auto Warning Settings**, and **Maintenance**.

Misc. Network Settings

Accessible IP List

The screenshot shows the Moxa VPM-7704 Web Console interface. At the top, the Moxa logo and 'Total Solution for Industrial Device Networking' are displayed, along with the website 'www.moxa.com'. Below this is a status bar showing device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The left sidebar contains a 'Main Menu' with options: Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, Misc. Network Settings (selected), Accessible IP List (active), SNMP, System Log Settings, Syslog Settings, Auto Warning Settings, Maintenance, System Monitoring, Save Configuration, and Restart. The main content area is titled 'Accessible IP List' and includes a checkbox 'Enable the accessible IP list ("Disable" will allow all IP's connection request)' which is currently unchecked. Below the checkbox is a table with 10 rows, each with columns for 'No.', 'IP Address', and 'Netmask'. All entries in the table are currently set to '-'. The table is as follows:

No.	IP Address	Netmask
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-

The VPM-7704 can receive the status of configured VPort 700 devices on the accessible IP address list. Please refer to the VPort 700 series user's manual for more detailed information.

SNMP

The screenshot shows the Moxa VPM-7704 Web Console interface for the 'SNMP' configuration page. The layout is identical to the previous screenshot, with the 'Main Menu' on the left and the 'SNMP' configuration area on the right. The 'Main Menu' has 'SNMP' selected. The main content area is titled 'SNMP' and contains two sections: 'SNMP Read/Write Settings' and 'Trap Settings'. The 'SNMP Read/Write Settings' section includes a table with the following values:

SNMP versions	V1, V2c
V1, V2c read community	public
V1, V2c write/read community	private
V3 read/write user name	admin
V3 read/write authentication mode	No-Auth
V3 read/write password	-
V3 read/write privacy mode	disable
V3 read/write privacy	-

The 'Trap Settings' section includes a table with the following values:

1st Trap server IP/name	-
1st Trap community	public
2nd Trap server IP/name	-
2nd Trap community	public

The VPM-7704 can receive SNMP status from configured VPort 700 series devices. Please refer to the VPort 700 series user's manual for more detailed information.

System Log Settings

Event Group	Local Log	Remote Log	Summary
System	☐	☐	System Cold Start, System Warm Start
Network	☐	☐	DHCP Get IP/Renew, Mail Fail
Config	☐	☐	Login Fail, IP Changed, Config Changed, Firmware Upgrade, Config Import, Config Export
OpMode	☐	☐	Connect, Disconnect, Restart

[Submit](#)

The system log function provides a method to record system status changes. The VPM-7704 provides four event groups: **System**, **Network**, **Config** and **OpMode**; choose to record these events locally or remotely by selecting the associated check box. If you use the remote log function, please configure the syslog settings through the VPort 700 series main module.

Syslog Settings

Syslog server	Port destination
Syslog server 1	514
Syslog server 2	514

The VPM-7704 can receive **Syslog Settings** from configured VPort 700 series devices. Please refer to the VPort 700 series user's manual for more detailed information.

Auto Warning Settings

Auto warnings alert you to unexpected events. The right warning trigger conditions make it easier to manage and monitor the VPM-7704 effectively. There are three **Auto Warning Settings** sub-categories: **Event Settings**, **Serial Event Settings** and **E-mail Alert**.

Event Settings

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Model	- VPM-7704	IP	- 192.168.127.241	MAC Address	- 00:90:E8:7A:7B:6C
Name	- VPM-7704_8698	Serial NO.	- 8698	Firmware	- 1.0 Build 10030313

Event Settings

Main Menu
Overview
Basic Settings
Network Settings
- Serial Port Settings
- System Management
- Misc. Network Settings
- Auto Warning Settings
Event Settings
Serial Event Settings
E-mail Alert
- Maintenance
- System Monitoring
Save Configuration
- Restart

System Event

Cold start ☐ Mail ☐ Trap
Warm start ☐ Mail ☐ Trap

Config Event

Console login auth fail ☐ Mail ☐ Trap
IP changed ☐ Mail

Submit

The VPM-7704 can provide status notifications through E-mail or SNMP traps. VPM-7704 system events such as a **Cold start** or a **Warm start**, and a **Console login authentication failure** configuration event can all trigger both types of notification. However, an **IP changed** event can only trigger an e-mail notification.

Cold start

A cold start occurs when the system is turned on from a powered off state. The VPM-7704 can automatically issue notification by e-mail or SNMP trap after a cold start.

Warm start

A warm start occurs when the system is restarted without turning the power off. The VPM-7704 can automatically issue notification by e-mail or SNMP trap after a warm start.

Console login authentication failure

This event triggers when a user attempts to log in to the console or settings with an incorrect password. This can be configured to prompt e-mail or SNMP trap notification.

IP address changed

This event triggers when a user changes the VPM-7704's IP address. The VPM-7704 can send an e-mail notification with the new IP address once the IP address changes, before the VPM-7704 restarts. If the VPM-7704 fails to send mail to the mail server after 15 seconds, the device will abort the automated e-mail notification and restart directly.

Serial Event Settings

The screenshot shows the MOXA VPM-7704 Web Console Configuration interface. At the top, the MOXA logo and 'Total Solution for Industrial Device Networking' are displayed, along with the website 'www.moxa.com'. Below this is a status bar showing device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The main menu on the left includes Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, Misc. Network Settings, Auto Warning Settings, Event Settings, Serial Event Settings (highlighted), E-mail Alert, Maintenance, System Monitoring, Save Configuration, and Restart. The main content area is titled 'Serial Event Settings' and contains three columns: 'Serial Port Event', 'DCD Changed', and 'DSR Changed'. Each column has a 'Mail' checkbox and a 'Trap' checkbox. The 'Serial Port Event' column lists Port 1, Port 2, Port 3, Port 4, and All ports. The 'DCD Changed' and 'DSR Changed' columns each have a 'Mail' checkbox and a 'Trap' checkbox. A 'Submit' button is located at the bottom right of the configuration area.

DCD changed

This event triggers when the Data Carrier Detect (DCD) signal on the specified port changes, which also indicates that the modem connection status has changed. For example, if the DCD signal changes to high, this means that the local modem and remote modem have connected. If the DCD signal changes to low, this means that the connection is down. This can prompt an e-mail or SNMP trap notification.

DSR changed

This event triggers when the Data Set Ready (DSR) signal has changes, which also indicates that the data communication equipment's (DCE) power has changed. For example, a DSR signal change to high means that the DCE is powered on. A DSR signal change to low means that the DCE is powered off. This can prompt an e-mail or SNMP trap notification.

Mail

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage the VPM-7704. If the check box is selected, the VPM-7704 sends mail to pre-defined mail boxes when the specified events, such as **Cold start**, **Warm start**, or **Authentication failure**, occur.

Trap

Setting	Factory Default	Necessity
Enable, Disable	Disable	Optional

This feature helps the administrator manage the VPM-7704. If the check box is selected, the VPM-7704 sends an SNMP trap to a pre-defined SNMP Trap server when the specified events, such as **Cold start**, **Warm start**, or **Authentication failure**, occur.

E-mail Alert

The screenshot shows the Moxa VPM-7704 Web Console interface. At the top, the Moxa logo and tagline 'Total Solution for Industrial Device Networking' are displayed alongside the website 'www.moxa.com'. Below this is a status bar with device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The left sidebar contains a 'Main Menu' with options like Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, Misc. Network Settings, Auto Warning Settings, Event Settings, Serial Event Settings, E-mail Alert (selected), Maintenance, System Monitoring, Save Configuration, and Restart. The main content area is titled 'E-mail Alert' and contains a table for configuring SMTP servers and email addresses.

E-mail Alert	
1st SMTP server	-
1st SMTP account name	-
1st sender's e-mail address	-
2nd SMTP server	-
2nd SMTP account name	-
2nd sender's e-mail address	-
1st e-mail address	-
2nd e-mail address	-

The VPM-7704 can receive **E-mail Alert** settings from configured VPort 700 devices. Please refer to the VPort 700 series user's manual for more detailed information.

Maintenance

There are four **Maintenance** sub-categories: **Firmware Upgrade**, **Configuration Import**, **Configuration Export** and **Load Factory Default**.

Firmware Upgrade

The screenshot shows the Moxa VPM-7704 Web Console interface for the Firmware Upgrade section. The top header and status bar are identical to the previous screenshot. The left sidebar shows the 'Main Menu' with 'Firmware Upgrade' selected under the 'Maintenance' category. The main content area is titled 'Firmware Upgrade' and displays a warning message: '!!! Warning !!!' and 'Note: Upgrade firmware will discard your un-saved configuration changes and restart the system!'. Below the note is a 'Select firmware file' section with a text input field and a 'Browse...' button. At the bottom of the section is a green 'Submit' button.

You can upgrade the VPM-7704's firmware through the web console. If you have made any changes to your configuration, remember to save the configuration first before upgrading the firmware. Please refer to **Save Configuration** later in this chapter to save your configuration. Any unsaved changes will be discarded when the firmware is upgraded. To upgrade the firmware, simply enter the file name and click Submit. The latest firmware can be downloaded from www.moxa.com.

Configuration Import

The screenshot shows the Moxa VPM-7704 Web Console Configuration interface. At the top, the Moxa logo and tagline "Total Solution for Industrial Device Networking" are displayed alongside the website "www.moxa.com". Below this is a header bar with device information: Model (VPM-7704), Name (VPM-7704_12346), IP (192.168.33.13), Serial NO. (12346), MAC Address (00:90:E8:AE:FB:C3), and Firmware (1.0 Build 10032611). The left sidebar contains a "Main Menu" with options: Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, Misc. Network Settings, Auto Warning Settings, Maintenance, Firmware Upgrade, Configuration Import (highlighted), Configuration Export, Load Factory Default, System Monitoring, Save Configuration, and Restart. The main content area is titled "Configuration Import" and features a "Configuration Import" section with a "Select configuration file" label, a text input field, and a "Browse..." button. Below this is a green "Submit" button.

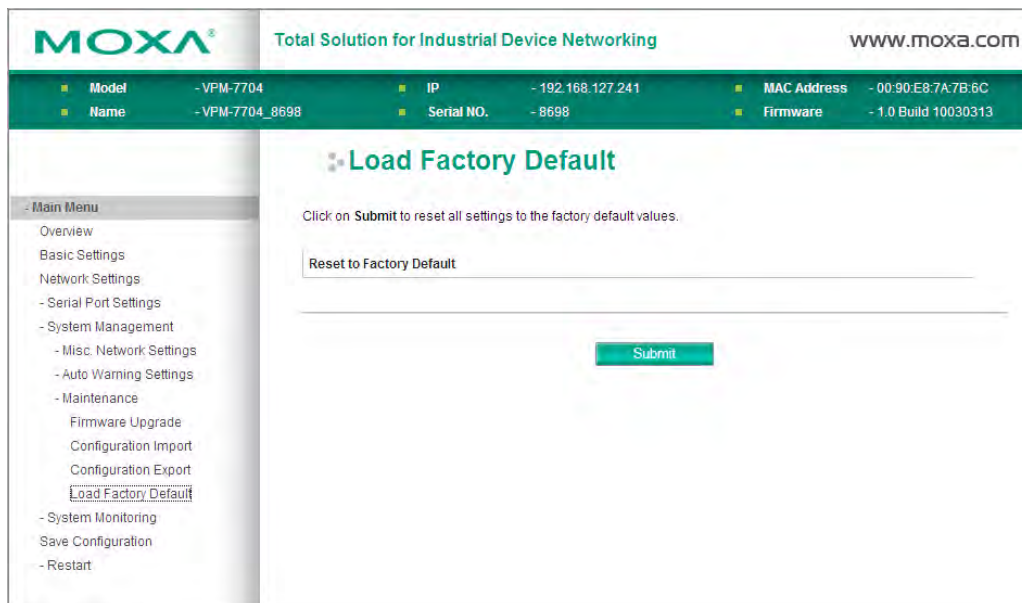
To import a configuration, go to System Management => Maintenance => Configuration Import. Enter the configuration file path and click **Submit**. The VPM-7704's configuration settings will be updated with the configuration file.

Configuration Export

The screenshot shows the Moxa VPM-7704 Web Console Configuration interface. At the top, the Moxa logo and tagline "Total Solution for Industrial Device Networking" are displayed alongside the website "www.moxa.com". Below this is a header bar with device information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The left sidebar contains a "Main Menu" with options: Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, Misc. Network Settings, Auto Warning Settings, Maintenance, Firmware Upgrade, Configuration Import, Configuration Export (highlighted), Load Factory Default, System Monitoring, Save Configuration, and Restart. The main content area is titled "Configuration Export" and features a "Configuration Export" section with a green "Download" button.

To export a configuration, go to System Management => Maintenance => Configuration Export and click **Download**. A standard download window will appear; you will be able to save the configuration with the filename and in the location of your choice.

Load Factory Default



This function will reset all of the VPM-7704's settings to the factory default values.

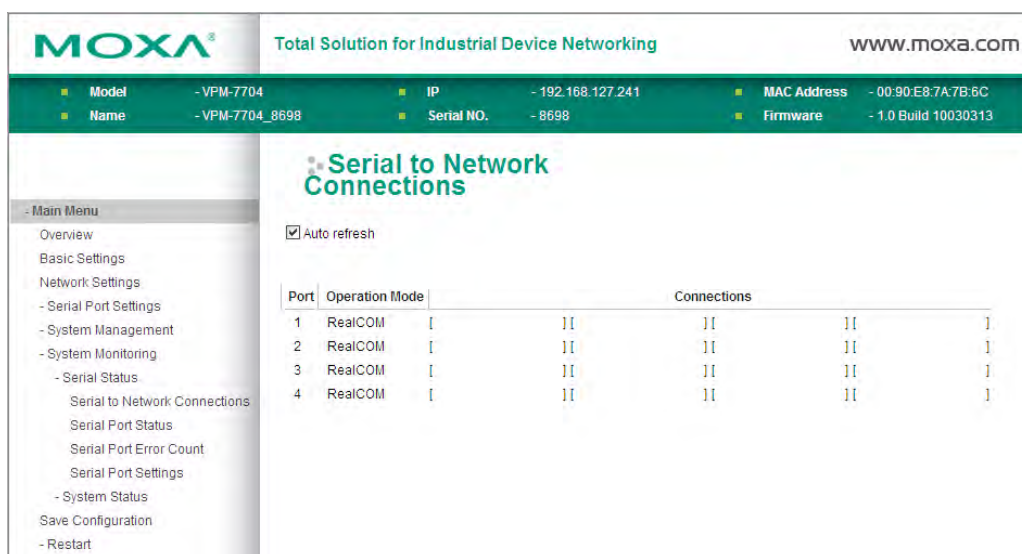
System Monitoring

There are two **System Monitoring** sub-sections: **Serial Status** and **System Status**.

Click on **Serial Status** to display **Serial to Network Connections**, **Serial Port Status**, **Serial Port Error Count** and **Serial Port Settings**.

Serial Status

Serial Status: Serial to Network Connections



Use **Serial to Network Connections** under **Serial Status** to view the operation mode and status of each connection, for each serial port. All monitor functions refresh automatically every five seconds.

Serial Status: Serial Port Status

MOXA® Total Solution for Industrial Device Networking www.moxa.com

Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Serial Port Status

☒ Auto refresh

Port	TxCnt	RxCnt	TxTotalCnt	RxTotalCnt	DSR	DTR	RTS	CTS	DCD
1	0	0	0	0					
2	0	0	0	0					
3	0	0	0	0					
4	0	0	0	0					

Main Menu

- Overview
- Basic Settings
- Network Settings
 - Serial Port Settings
 - System Management
 - System Monitoring
 - Serial Status
 - Serial to Network Connections
 - Serial Port Status
 - Serial Port Error Count
 - Serial Port Settings
 - System Status
 - Save Configuration
 - Restart

Go to **Serial Port Status** under **Serial Status** to view the current status of each serial port.

Serial Status: Serial Port Error Count

MOXA® Total Solution for Industrial Device Networking www.moxa.com

Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Serial Port Error Count

☒ Auto refresh

Port	ErrCnt			
	Frame	Parity	Overrun	Break
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Main Menu

- Overview
- Basic Settings
- Network Settings
 - Serial Port Settings
 - System Management
 - System Monitoring
 - Serial Status
 - Serial to Network Connections
 - Serial Port Status
 - Serial Port Error Count
 - Serial Port Settings
 - System Status
 - Save Configuration
 - Restart

The **Serial Port Error Count** page tracks the number and type of errors that have occurred on each port.

Error Type	Definition
Frame	Framing error; indicates that the received character did not have a valid stop bit.
Parity	Parity error; indicates that the received data character did not match the parity selected.
Overrun	The device was unable to hand received data to a hardware buffer because the input rate exceeded the device's ability to handle data.
Break	Break interrupt; indicates that the received data input was held low for longer than a full-word transmission time interval. A full-word transmission time interval is defined as the total time to transmit the start, data, parity, and stop bits.

Serial Status: Serial Port Settings

MOXA Total Solution for Industrial Device Networking www.moxa.com

Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

Serial Port Settings

☒ Auto refresh

Port	Baud Rate	Data Bits	Stop Bits	Parity	Flow Control			FIFO	Interface
					RTS/CTS	XON/XOFF	DTR/DSR		
1	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
2	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
3	115200	8	1	None	ON	OFF	OFF	Enable	RS-232
4	115200	8	1	None	ON	OFF	OFF	Enable	RS-232

The **Serial Port Settings** page displays the current status of each VPM-7704 serial port. The status is automatically updated every five seconds.

System Status

Click on **System Status** to display **Network Connections** and **System log**.

System Status: Network Connections

MOXA Total Solution for Industrial Device Networking www.moxa.com

Model - VPM-7704 IP - 192.168.127.241 MAC Address - 00:90:E8:7A:7B:6C
Name - VPM-7704_8698 Serial NO. - 8698 Firmware - 1.0 Build 10030313

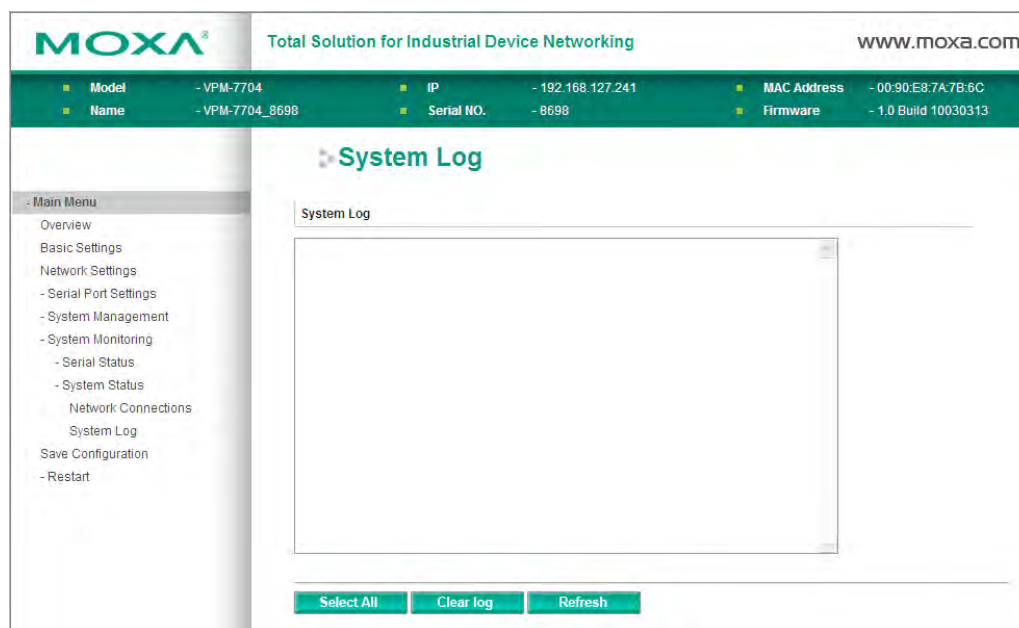
Network Connections

☒ Auto refresh

Protocol	Recv-Q	Send-Q	Local Address	Foreign Address	State
TCP	0	0	192.168.127.241:8000	*	LISTEN
TCP	0	0	192.168.127.241:4900	*	LISTEN
TCP	0	0	192.168.127.241:14900	*	LISTEN
TCP	0	0	192.168.127.241:23	*	LISTEN
TCP	0	0	192.168.127.241:80	*	LISTEN
TCP	0	0	192.168.127.241:950	*	LISTEN
TCP	0	0	192.168.127.241:951	*	LISTEN
TCP	0	0	192.168.127.241:952	*	LISTEN
TCP	0	0	192.168.127.241:953	*	LISTEN
TCP	0	0	192.168.127.241:966	*	LISTEN
TCP	0	0	192.168.127.241:967	*	LISTEN
TCP	0	0	192.168.127.241:968	*	LISTEN
TCP	0	0	192.168.127.241:969	*	LISTEN
TCP	0	0	192.168.127.241:80	192.168.127.1:4669	ESTAB
TCP	0	0	192.168.127.241:80	192.168.127.1:4670	ESTAB
TCP	0	0	192.168.127.241:80	192.168.127.1:4671	ESTAB

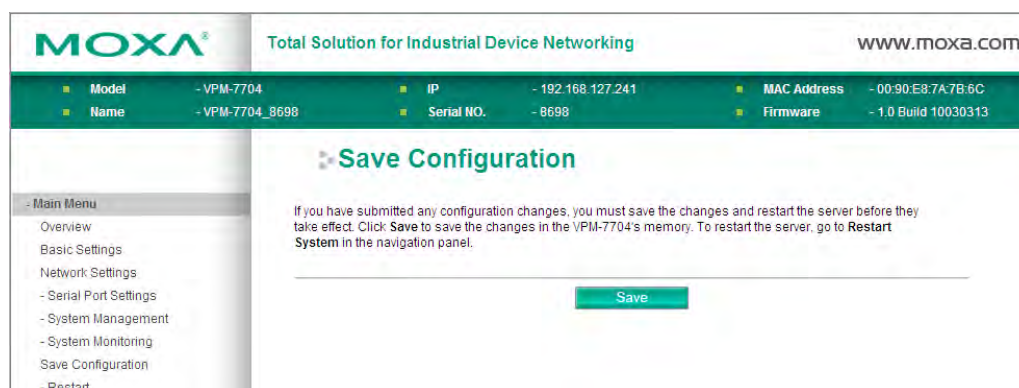
Use **Network Connections** under **System Status** to view network connection information.

System Status: System Log



This option displays the system log. You may click **Select All** to select the entire log if you wish to copy and paste the contents into a text file.

Save Configuration



Click **Save Configuration** and then click **Save** to save your submitted configuration changes. These configuration changes will take effect once the VPM-7704 is restarted. If you do not save your changes before restarting, they will be discarded.

Restart: Restart System

The screenshot shows the Moxa VPM-7704 Web Console interface. At the top, the Moxa logo and tagline 'Total Solution for Industrial Device Networking' are displayed, along with the website 'www.moxa.com'. Below this is a status bar showing system information: Model (VPM-7704), Name (VPM-7704_8698), IP (192.168.127.241), Serial NO. (8698), MAC Address (00:90:E8:7A:7B:6C), and Firmware (1.0 Build 10030313). The left sidebar contains a 'Main Menu' with options: Overview, Basic Settings, Network Settings, Serial Port Settings, System Management, System Monitoring, Save Configuration, Restart, Restart System (highlighted), and Restart Ports. The main content area is titled 'Restart System' and features a warning message: '!!! Warning !!!' followed by 'Clicking Restart will disconnect all serial and Ethernet connections and reboot the VPM-7704 server. NOTE: Unsaved configuration changes will be discarded, and data currently in the middle of transmission may be lost.' A green 'Restart' button is located at the bottom of the main content area.

Use to **Restart System** under **Restart** and click the **Restart** button to restart the VPM-7704. If you do not save your configuration changes before you restart the system those changes will be lost.

Restart: Restart Ports

The screenshot shows the Moxa VPM-7704 Web Console interface, specifically the 'Restart Ports' page. The top header and status bar are identical to the previous screenshot. The left sidebar shows the 'Main Menu' with 'Restart Ports' highlighted. The main content area is titled 'Restart Ports' and includes the instruction 'Restart the selected serial ports.' Below this is a 'Select Ports' section with a row of four checkboxes labeled 1, 2, 3, and 4. At the bottom of the main content area, there are two green buttons: 'Select All' and 'Submit'.

Use to **Restart Ports** under **Restart** and then select the ports you wish to restart. Click **Select All** to select all the ports. Click the **Submit** button to restart the selected ports.

Installing VPM-7704 Driver

The following topics are covered in this chapter:

- ❑ **Overview**

- ❑ **Installing a Virtual COM port on your computer**

- COM Mapping
- Configure the mapped COM ports

- ❑ **Linux Real TTY Drivers**

- Basic Procedures
- Hardware Setup
- Installing Linux Real TTY Driver Files
- Mapping TTY Ports
- Removing Mapped TTY Ports
- Removing Linux Driver Files

Overview

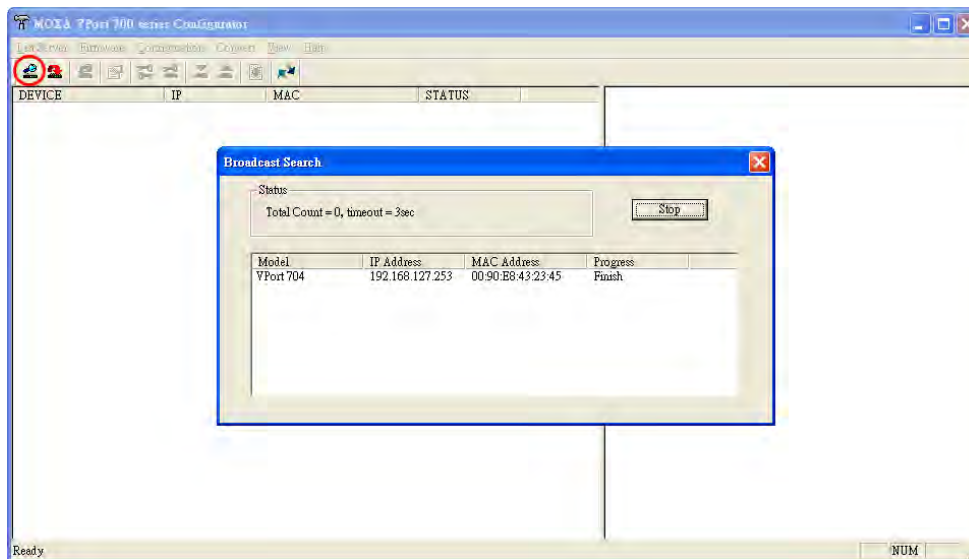
With a virtual RealCOM serial port it is possible to manage, monitor and modify your VPM-7704 device from a remote location.

You can use the VPort 700 utility to easily configure your VPM-7704 device server over the network. Once the VPort 700 utility is installed, the most important step is to use COM Mapping to create a virtual COM port on your computer. Please refer to the VPort 700 series user's manual for detailed VPort utility installation instructions.

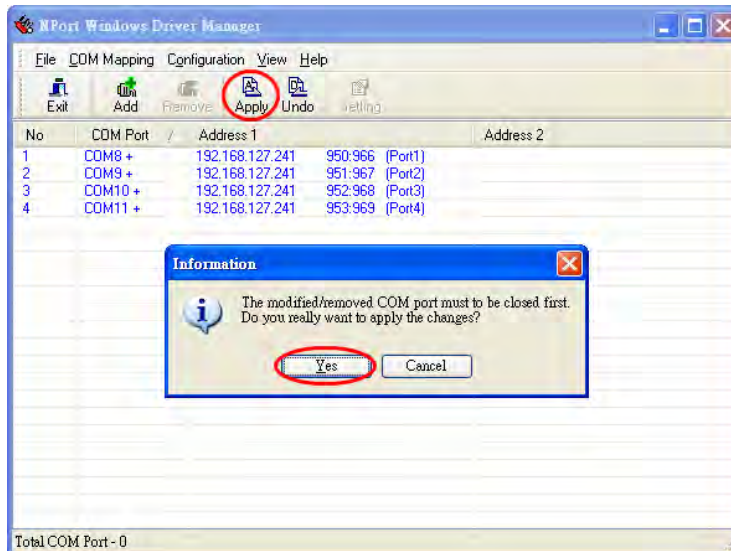
Installing a Virtual COM port on your computer

COM Mapping

Run the VPort 700 series configurator and press the search button at the upper left to find all detectable VPort 700 series products.

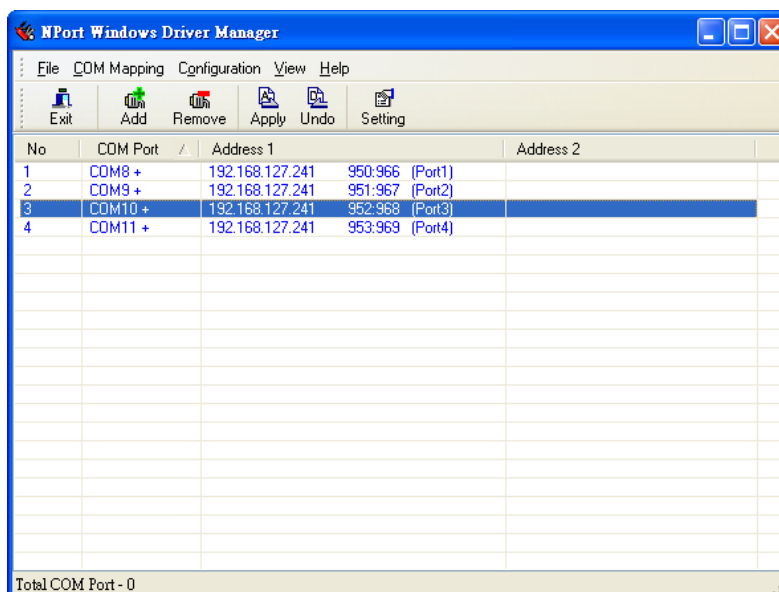


Double-left-click to launch NPort Windows Driver Manager. The NPort Windows Driver Manager will help you easily install a virtual COM port on your computer. Available COM ports and their mappings appear in blue until they are activated. Activating a COM port saves the information in the host system registry and makes the COM port available for use. The host computer will not have the ability to use the COM port until the COM ports are activated. Click **Apply** and then click **Yes** to activate the COM ports at this time, or click **No** to activate the COM ports later.

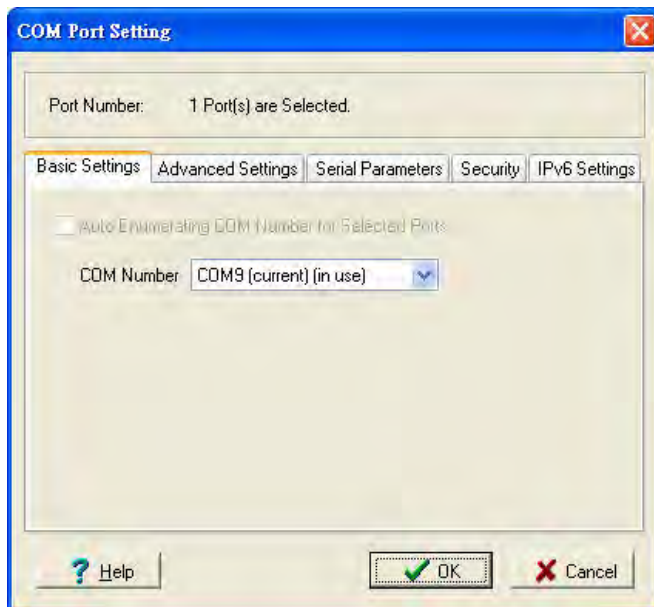


Configure the mapped COM ports

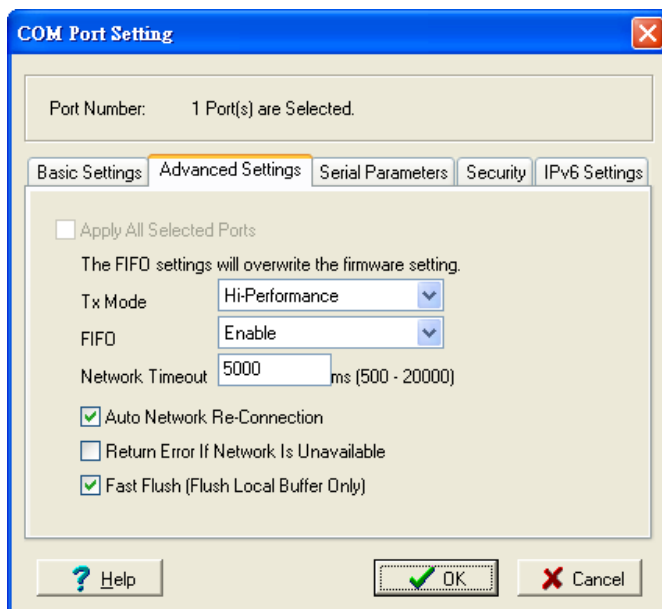
For Real COM Mode to re-configure the settings for a particular serial port on the VPM-7704 select the row corresponding to the desired port and then click the **Setting** button.



Click the **Basic Settings** tab. Use the **COM Number** drop-down list to select a COM number to be assigned to this serial port. Select the **Auto Enumerating COM Number for Selected Ports** option to automatically assign available COM numbers in sequence to selected serial ports. Note that ports that are "in use" will be labeled accordingly.



Click the **Advanced Settings** tab to modify Tx Mode, FIFO, and Flash Flush.



Tx Mode

Hi-Performance is the default for Tx mode. After the driver sends data to the VPM-7704, the driver immediately issues a "Tx Empty" response to the program. Under **Classical** mode, the driver will not send the "Tx Empty" response until after confirmation is received from the VPM-7704's serial port. This causes lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO

If FIFO is **Disabled**, the VPM-7704 will transmit one byte each time the Tx FIFO becomes empty, and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput.

Network Timeout

You can use this option to prevent blocking if the target NPort is unavailable.

Auto Network Re-Connection

With this option enabled, the driver will repeatedly attempt to re-establish the TCP connection if the VPM-7704 does not respond to background "check alive" packets.

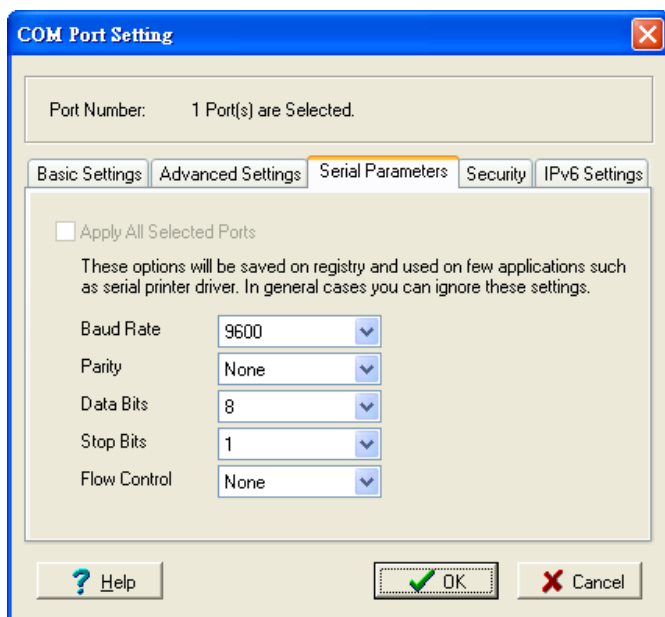
Return error if network is unavailable

If this option is disabled, the driver will not return any error even when a connection cannot be established to the VPM-7704. With this option enabled, calling the Win32 Comm function will result in the error return code "STATUS_NETWORK_UNREACHABLE" when a connection cannot be established to the VPM-7704. This usually means that your host's network connection is down, perhaps due to a cable being disconnected. However, if you can reach other network devices, it may be that the VPM-7704 is not powered on or is disconnected. Note that **Auto Network Re-Connection** must be enabled in order to use this function.

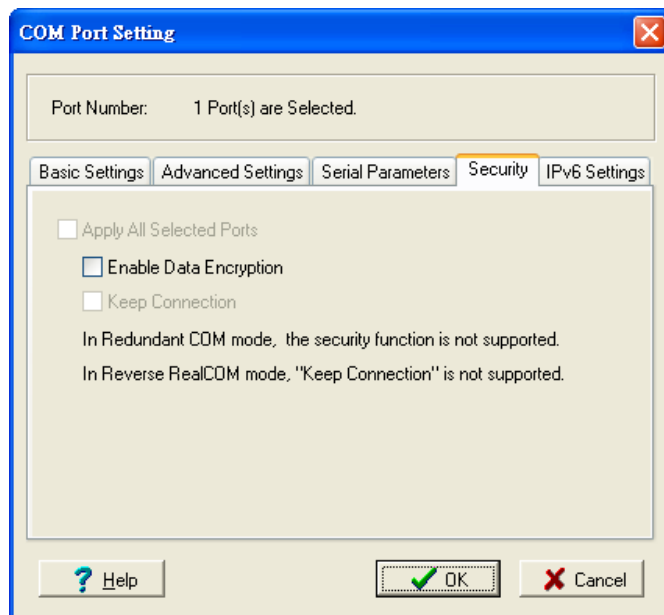
Fast Flush (only flushes the local buffer)

For some applications, the user's program will use the Win32 "PurgeComm()" function before it reads or writes data. After a program uses this PurgeComm() function, the NPort driver continues to query the NPort's firmware several times to make sure no data is queued in the NPort's firmware buffer, rather than just flushing the local buffer. This design is used to satisfy some special considerations. However, it may take more time (about several hundred milliseconds) than a native COM1 due to the additional time spent communicating across the Ethernet connection. This is why PurgeComm() works significantly faster with native COM ports on the PC than with mapped COM ports on the VPM-7704. In order to accommodate other applications that require a faster response time, the new NPort driver implements a new Fast Flush option. By default, this function is enabled. If you have disabled Fast Flush and find that COM ports mapped to the VPM-7704 perform significantly slower than when using a native COM port, try to verify if "PurgeComm()" functions are used in your application. If so, try enabling the Fast Flush function and see if there is a significant improvement in performance.

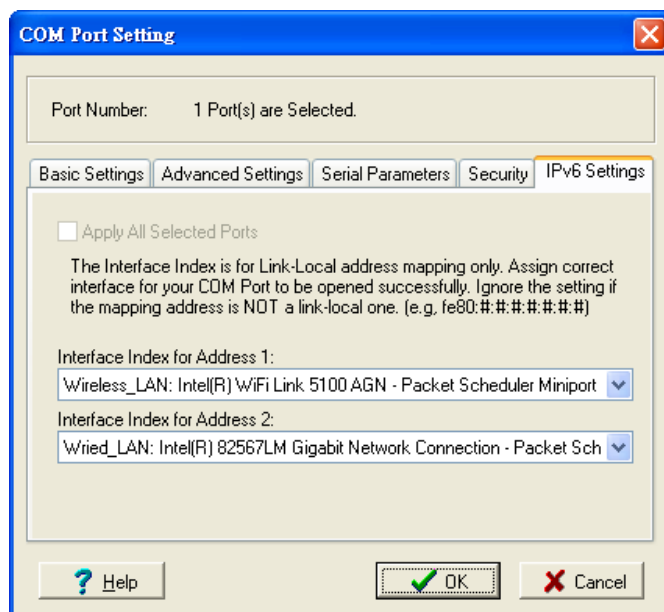
The following figure shows the default **Serial Parameters** settings when the VPM-7704 is powered on. However, the program can redefine the serial parameters to different values after the program opens the port via the Win32 API.



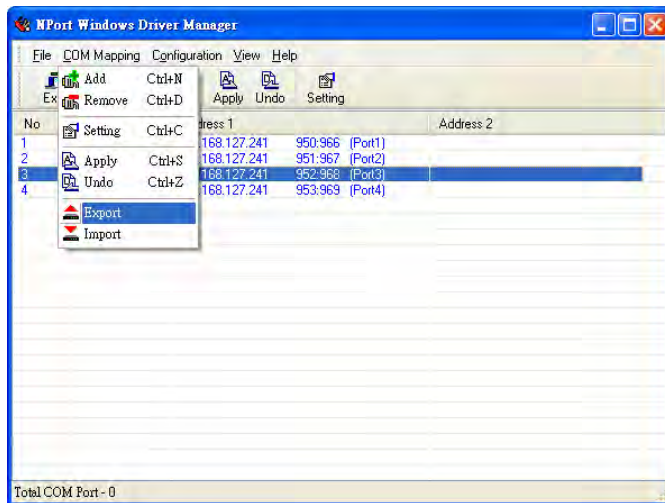
Click the **Security** tab to configure security settings. Select the **Enable Data Encryption** option to enable data to be encrypted when transmitted over the COM ports. After selecting the encryption option, select the **Keep connection** option to start encrypting COM port communications immediately without restarting the COM ports. (If your application will open/close COM ports frequently and the VPM-7704 is only for one host, you can enable this option to speed up the opening/closing time. However, this will result in your host tying up the COM port so that other hosts cannot use it.) Select the **Apply All Selected Ports** option to enable the security settings to be applied to all COM ports.



Click the **IPv6 Setting** tab to configure the interface for Link-Local address mapping. When the global IPv6 address is used, this function can be ignored. When the Link-Local IPv6 address is used, users should select an interface for routing on interface index for address 1. The interface index for address 2 is for "redundant COM mode," which applies only to the CN 2600 series.



To save the configuration to a text file, select **Export** from the **COM Mapping** menu. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.



The first way is with **On-line COM Mapping**. On-line COM Mapping will check to make sure that the VPM-7704 is connected correctly to the network, and then install the driver on the host computer.

The second way is with **Off-line COM Installation**, without first connecting the VPM-7704 to the network. Off-line COM Mapping can decrease the system integrator's effort by solving different field problems. Via off-line installation, users can first process software installation for the host, and then install the VPM-7704 to different fields.

Use the following procedure to map COM ports:

1. On-line COM Mapping:
Connect the VPM-7704 to the network → Set the VPM-7704 to the proper IP address → Map COMs to your host → Apply Change.
2. Off-line COM Mapping:
Map COMs to your host → Apply Change → Connect the VPM-7704 to the network → Configure the VPM-7704's IP address.

Linux Real TTY Drivers

Basic Procedures

To map a VPM-7704 serial port to a Linux host's tty port, follow these instructions:

1. Set up the VPM-7704. After verifying that the IP configuration works and you can access the VPM-7704 (by using ping, telnet, etc.), configure the desired serial port on the VPM-7704 to Real COM mode.
2. Install the Linux Real tty driver files on the host
3. Map the serial port to the host's tty port

Hardware Setup

Before proceeding with the software installation, make sure you have completed the hardware installation. After installing the hardware, you must configure the operating mode of the serial port on your VPM-7704 to Real COM mode.

Installing Linux Real TTY Driver Files

1. Obtain the driver file from the included CD-ROM or the Moxa website, at <http://www.moxa.com>.
2. Log in to the console as a super user (root).
3. Execute `cd /` to go to the root directory.

4. Copy the driver file npreal2xx.tgz to the / directory.
5. Execute tar xvfz npreal2xx.tgz to extract all files into the system.
6. Execute /tmp/moxa/mxinst.
For RedHat AS/ES/WS and Fedora Core1, append an extra argument as follows:
/tmp/moxa/mxinst SP1
The shell script will install the driver files automatically.
7. After installing the driver, you will be able to see several files in the /usr/lib/npreal2/driver folder:
>mxaddsvr (Add Server, mapping tty port)
>mxdelsvr (Delete Server, un-mapping tty port)
>mxloadsvr (Reload Server)
>mxmknod (Create device node/tty port)
>mxrmnod (Remove device node/tty port)
>mxuninst (Remove tty port and driver files)
At this point, you will be ready to map the NPort serial port to the system tty port.

Mapping TTY Ports

Make sure that you set the operation mode of the desired VPM-7704 serial port to Real COM mode. After logging in as a super user, enter the directory /usr/lib/npreal2/driver and then execute mxaddsvr to map the target NPort serial port to the host tty ports. The syntax of mxaddsvr is as follows:

mxaddsvr [NPort IP Address] [Total Ports] ([Data port] [Cmd port])

The **mxaddsvr** command performs the following actions:

1. Modifies npreal2d.cf.
2. Creates tty ports in directory /dev with major & minor number configured in npreal2d.cf.
3. Restarts the driver.

Mapping tty ports automatically

To map tty ports automatically, you may execute mxaddsvr with just the IP address and number of ports, as in the following example:

```
# cd /usr/lib/npreal2/driver
# ./mxaddsvr 192.168.3.4 4
```

In this example, 4 tty ports will be added, all with IP 192.168.3.4, with data ports from 950 to 953 and command ports from 966 to 969.

Mapping tty ports manually

To map tty ports manually, you may execute mxaddsvr and manually specify the data and command ports, as in the following example:

```
# cd /usr/lib/npreal2/driver
# ./mxaddsvr 192.168.3.4 4 4001 966
```

In this example, 4 tty ports will be added, all with IP 192.168.3.4, with data ports from 4001 to 4004 and command ports from 966 to 969.

Removing Mapped TTY Ports

After logging in as root, enter the directory `/usr/lib/npreal2/driver` and then execute `mxdelsvr` to delete a server. The syntax of `mxdelsvr` is:

mxdelsvr [IP Address]

Example:

```
# cd /usr/lib/npreal2/driver
# ./mxdelsvr 192.168.3.4
```

The following actions are performed when executing **mxdelsvr**:

1. Modify `npreal2d.cf`.
2. Remove the relevant tty ports in directory `/dev`.
3. Restart the driver.

If the IP address is not provided in the command line, the program will list the installed servers and total ports on the screen. You will need to choose a server from the list for deletion.

Removing Linux Driver Files

A utility is included that will remove all driver files, mapped tty ports, and unload the driver. To do this, you only need to enter the directory `/usr/lib/npreal2/driver`, then execute `mxuninst` to uninstall the driver. This program will perform the following actions:

Unload the driver.

Delete all files and directories in `/usr/lib/npreal2`

Delete directory `/usr/lib/npreal2`

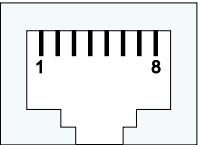
Modify the system initializing script file.

Port Pinout Diagrams

Serial Port Pinouts

RS-232 / 422 / 485 Port Pinouts

Pin	RS-232	RS-422 4-wire RS-485	2-wire RS-485
1	DSR	–	–
2	RTS	TxD+	–
3	GND	GND	GND
4	TxD	TxD-	–
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	–	–
8	DTR	–	–



Compliance Notice



CE Warning

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take appropriate measures.

Federal Communications Commission Statement

FCC - This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.